STRATEGIC CHOICES FOR SUB-SAHARAN AFRICA

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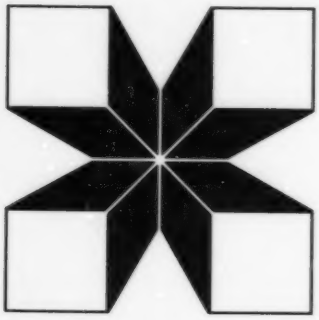

CANADA

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Strategic choices for sub-Saharan Africa

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FOREWORD

In the 1980s, the development process in sub Saharan Africa appeared to have become stunted: there was a considerable slippage in economic growth and in social and political institutions. These difficulties undermined the region's research capacities and its ability to undertake development research generally. In view of these difficulties, IDRC management and the Board of Governors decided (a) to document the uniqueness of the African situation in terms of how it impacts on the region's capacity to undertake developmental research compared with other developing regions; and (b) to determine whether or not there was any need for changes in IDRC's polices to enhance the effectiveness of its support to African research institutions.

Data was collected and IDRC staff were extensively consulted, culminating in the preparation of a Discussion Paper which was reviewed by the Board of Governors in October 1989. The Board invited Centre Management to test the document with African research scientists, research managers, and development practioners. In accordance with the Board's wishes, IDRC's Regional Directors for West and Central Africa (WARO) and East and Southern Africa (EARO) undertook broad consultations. In EARO, five national consultative meetings were held in Kenya, Tanzania, Uganda, Zambia, and Zimbabwe, attended by 97 African participants. In WARO, a regional consultative meeting was held in Accra, Ghana, with the participation of 30 Africans representing 10 countries in the region. Participants strongly endorsed the principal tenets of the Centre's strategy for the sub Saharan Africa region. They suggested refinements to the main recommendations and these are highlighted in special boxes in this report.

This report, buttressed with input from its African clients, should enable the Centre to strengthen existing programs for the region and to tailor future support to meet the emerging needs of research institutions as well as those of research scientists so as to strengthen SSA's development research capacity in the 1990's.

This report was made possible by the concerted efforts of many IDRC program staff and by our African partners whose insightful comments were essential in preparing this document. I would particularly like to thank Andrew Asibey and Terry Smutylo for doing the initial data collection and analysis and for writing up the document. Pierre Sané, Regional Director (WARO) and Adzei Bekoe, Regional Director (EARO) also deserve recognition for steering the regional consultative meetings and for their input which enriched the contents of this report. The contributions of African researchers, especially those who participated in the consultative process are deeply appreciated.

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SUMMARY

The essential question for this paper is whether IDRC's current policies and procedures are adequate for effective support to research in sub-Saharan Africa. After reviewing the development needs and conditions in sub-Saharan Africa, in comparison with other developing regions, the conclusion is reached that the region requires, and is receiving, special consideration from many donor agencies. IDRC's mandate is based on the premise that indigenous research capacity gives national development programs access to essential knowledge and technologies. The capacity to create, apply and manage solutions to development problems and to adapt to emerging problems is necessary if development efforts are to be effective and sustained. This is the area in which IDRC seeks to contribute. In looking at the information available on the research environments in sub-Saharan Africa, it is clear that there are particular needs for which IDRC's philosophy and style of operation are ideally suited. Shifts of emphasis in, or refinements to, policies and operational practices are required, however, to make Centre funding more effective in responding to existing conditions.

Sub-Saharan Africa is a large grouping (45) of mainly small, poor countries facing severe economic, environmental and health problems, many of which are at the crisis stage. A **confluence of factors** makes sub-Saharan Africa different from other developing regions and constitutes a formidable constraint to sustainable economic development.

Not only do the general development problems facing sub-Saharan Africa require special attention, the research systems also present a challenge unlike those in other developing regions. A large number of fragile institutions are addressing a wide range of research problems with limited resources, both human and financial. Few, if any African countries have the means to address adequately any one of the development problems they face and none have the resources to sustain all the research and technological adaptation necessary to support the entire national development effort. Given the shortage of resources and the Pan-African nature of development problems, **IDRC's strategy for sub-Saharan Africa should be to strengthen human and institutional research resources through training and other means of research-capacity building; to increase collaboration and coordination with other like-minded donor agencies; and to promote regional cooperation and collaboration in producing and applying research results to development problems.** For such a strategy, the existing range of IDRC modalities is potentially well suited to the research systems in sub-Saharan Africa. However, some adjustments are needed.

STRATEGIC CHOICES FOR SUB-SAHARAN AFRICA

I. Introduction: A Special Case for Development Research

Why is sustainable growth not taking place in spite of large natural resources? Africa has the largest percentage of unexploited arable land on a per capita basis; it has mineral deposits, huge hydroelectric potential, and a young and dynamic population. Why the continuous denial of popular participation in spite of official statements recognizing it as essential and stating it as policy goal? Why are there increasing disparities and inequalities between town and country, between "educated" and "uneducated", between men and women, between ethnic groups, between masses and elites, etc...?

In spite of its large natural resources potential, sub-Saharan Africa is the largest collection of small poor countries in the world. Sixteen of the 20 poorest countries in the world are African. Two thirds of sub-Saharan African nations have populations of less than 10 million and only six nations have populations of 20 million or more (World Development Report, 1988). In 1985, the total gross national product (GNP) of the 45 countries in sub-Saharan Africa, representing a population of around 500 million people, was less than the GNP of Spain, a nation of 40 million people (Eicher, 1989). Although there is some variation among and within countries, many development problems are shared widely across the continent. Looking at factors such as economic growth, environmental degradation, and food production, the overall picture is bleak compared with other developing regions of the world.

The drastic fall in prices for its primary commodities, if continued to the year 2008, will make sub-Saharan Africa's terms of trade[1] decline to 62.8 from 98.7 in 1985 (ECA, Beyond Recovery, 1988:118). With no immediate improvement, these countries are expected to experience great difficulty in honouring **debt** obligations which, in 1987, amounted to $110 billion. To stem the economic decline and to obtain operating credit, over 30 sub-Saharan African countries are implementing structural adjustment programs promoted by the World Bank, the IMF, and other donor agencies. These programs are designed to improve the output of the productive sectors, particularly exports, while emphasizing fiscal restraint through cuts in public expenditures on health and social programs, primary education, research and higher education. Although accompanied by substantial infusions of aid, these reforms are exogenous in design and are not expected to lead to immediate improvements in the overall standards of living for the majority of people in the region. Expectations are to the contrary: for the period of 1985 to 1995,

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1 While "terms of trade" can be measured in different ways, in general it refers to the amount of imports that can be purchased with the earnings from a unit of exports.

the World Bank has forecast a decline in per capita income for low-income African countries of between 0.1% and 0.5% per year (World Bank, 1985).

The **population** growth rates, which average over 3% a year, are expected to be almost double the growth rates for South Asia and for Latin America by 2005. Populations are already putting pressure on stressed ecological systems through overgrazing, increased fuelwood gathering and bushfires. In combination with severe climatic conditions, this has led to rapid environmental degradation. By 1985, 16.4 million km^2 in Africa were affected, directly or indirectly, by desertification (ECA, 1988:106).

A decline in **food** production per capita in a majority of sub-Saharan African countries in the 1970s and 1980s, has resulted in massive importation of food in some countries, and the recurrent threat of famine in several places. With over two thirds of its economically active population employed in agriculture (compared with just over a quarter in Latin America), sub-Saharan Africa has food production problems of major dimensions.

Many of the precolonial agricultural production systems are not sustainable and yet persist along with other constraining values and social structures. Colonial legacies are still evident: in the exportation of primary resources; in the systems for public education and professional training; and in the population growth rates. Rapid urbanization is taking place without industrialization and employment creation; higher input costs are accompanied by declines in commodity prices. Today's picture of increased food dependency and deteriorating social programs, reinforced by inadequate national policy frameworks, the imposed structural adjustment programs and an influx of outside experts, have brought on further marginalization of the populations. The non-viable nature of many of these micro-states appears to be deepening.

There are, however, some **encouraging trends**. Promising rural initiatives led by local and international NGOs are filling the gaps left by the dismantling of rural development parastatals. Informal sector economies are thriving, providing a large proportion of urban employment and in some cases trying to "modernize" their production systems. New solidarity links are being established across national borders as the ideas of Pan-Africanism are being revived in the efforts of small farmers' associations, universities, trade unions, women's organizations and other interest groups.

The challenge for IDRC is to decide how it can contribute to the processes of development already underway, and how to reinforce the principles of sustainable growth, participation and equity which must underlie all long term, effective development efforts.

African development has been a subject of increasing concern and study over the past five years. Several studies have searched for insights through comparisons with other parts of the world at different stages of development. Parallels have been drawn with India, other parts of Asia and Latin America, looking at issues such as colonial history, country size and population, environmental conditions, food production systems and institutional development (Eisemon and Davis, 1989; Elliott & Roseboom, 1988; Lele & Goldsmith, 1989; Eicher, 1989; Cernea, 1987).

In general, the conclusions are that sub-Saharan Africa faces unique challenges, particularly with regard to technological adaptation, scientific training and the research environment. Comparing African agriculture today with the situation in post-independence India, for example, the multicrop focus in Africa makes more complex demands on a wider range of research disciplines and makes the setting of research priorities more difficult than did the two food crop bias in India. In addition, Africa has greater diversity in climate and soils; its pest and disease hazards are more acute; and its farming systems are more complex. One study found that agricultural projects in sub-Saharan Africa are significantly less economically sustainable than comparable projects in Latin America and Asia. It concluded that projects for Africa may have to be designed differently than those in the rest of the developing world (Cernea, 1987).

In terms of human skills and institutional development, Africa's legacy from the colonial period was inferior to that of Asia and Latin America. African states inherited a strong bias for extension and technology transfer, and an orientation toward the production of primary commodities and export agriculture. Many curricula still reflect these priorities. Progress towards restructuring agricultural institutions to serve the majority of rural people has been slow. Efforts to break with the past, to develop a stable, high level human resource base have been hampered by violence and the international brain drain.

Taken separately, the conditions and problems faced by the people of sub-Saharan Africa are not unique. Many parts of the developing world are struggling with similar burdens. What makes Africa a special case is not the specificity of its development needs but the conjuncture of severe economic, environmental and public health problems across a large number of small, poor countries, encompassing a wide range of ecological zones and a multitude of linguistic barriers. The existing social and political systems have not been able to respond individually and the basis for collaborative regional responses has yet to be laid. This **confluence of factors** makes sub-Saharan Africa's situation merit special attention from IDRC and other international development agencies.

II. Factors Affecting Scientific Research in Sub-Saharan Africa

From the 1960s to early 1980s, there was considerable growth in sub-Saharan Africa's scientific capacity. Many research institutions and universities were built and a large number of scientific and technical personnel were trained. However, the growth in research funding did not keep pace with the growth in personnel. In agricultural research, which receives roughly 50% of the total resources, expenditures increased three fold between 1959 and 1985, while scientist person-years increased 4.2 times (Pardey and Roseboom, 1988). While for all developing countries there has been a decline in research expenditure per scientist since the early 1970s, the downward trend is sharpest for sub-Saharan Africa (Elliott and Roseboom, 1988). Another important characteristic that distinguishes the region from others is the degree of dependence on external support to research. In Latin America and Asia, external funding is roughly 3 to 5 percent of total R & D spending, whereas in Africa it appears to be roughly 1/3 to 1/2, or about ten times as much.

With respect to growth in overall scientific personnel, between 1980 and 1985, the estimated number of trained scientists and engineers rose 93% from 243,000 to 469,000. Although this represents growth from 831 to 1,376 per million population, sub-Saharan Africa remains the developing region with the lowest R&D personnel ratio. One study estimated that Africa has about **one quarter** the number of scientists, engineers and managers per million people as Asia (Eicher, 1989 : 4). The costs of higher education in Africa are the highest in the Third World. Relative to per capita GNP, a university education in Africa costs, on average, ten times what it does in Latin America and seven times what it does in Asia (World Bank, 1985 : 45).

It appears that African research systems are more dependent on **public sector support** than those in other regions. In a large number of sub-Saharan African countries, governments are responsible for over 90% of national research and university expenditures (World Bank, 1985). The severe economic conditions coupled with structural adjustment policies in the 1980s have had negative effects on the ability of many African governments to fund "non-productive sectors," such as education and research. The resulting spending policies have: weakened the capacity of universities to train research scientists; allowed research infrastructure and supporting services to deteriorate; reduced the ability of institutions to recruit and employ available scientific personnel in teaching and research positions; and left many research staff without the means to do any research. Growing disillusionment among scientific and teaching personnel has resulted in widespread emigration and shifts from teaching and research endeavours to non-academic and non-research related positions. **Attrition rates** in agricultural research

institutions are reported to be between 7 and 11 percent per year. With national funding for research institutions and universities unlikely to increase over the next decade, and with the gains of the previous two decades eroding, efforts are required to optimize the use of current strengths and available resources.

The literature on African development research recognizes five major challenges which are central to giving national development programs access to the required scientific and technological tools:

(i) The need for viable **national and regional institutions** to create, adapt and apply technologies to African development problems.

(ii) The need for appropriately trained **human resources** at all levels: to plan, manage and do research; and to influence national policy and resource allocation decisions.

(iii) The need for significant **technological breakthroughs** with a few key commodities.

(iv) The need for mechanisms for sharing **research output** across the continent.

(v) The need for coordination and consistency among **donor programs** in line with African needs and interests. (It appears that external donors will be for some time the major funders of - and therefore influence on - African research.).

III. Strategies of Other Donors

In order to formulate its own broad strategy for sub-Saharan Africa, the Centre needs to have an overview of what other research supporting agencies are doing or planning to do, particularly with regard to program areas, geographical emphasis, support mechanisms and capacity building. This enables the Centre to determine its strengths, weaknesses and opportunities in relation to the activities of other donors, and to identify useful areas for collaboration. Looking at a variety of information sources, including published reports, policy documents and conducting interviews with representatives of selected donor agencies, it was found that available information is sketchy. The overview presented in this section is therefore tentative, an initial effort to be completed and refined as more information becomes available.

There are over twenty bilateral, multilateral and private foundations, including IDRC, which support development research-related activities in sub-Saharan Africa. From the 1987 John Lewis report (IDRC-MR160[e]), it can be estimated that research funding is about 4.6% of net global ODA disbursements. Using information from other sources, along with the Lewis figures, an effort was made to estimate the funding to research from all external sources.

The table in Annex C presents a rough aggregate picture of annual funding from donor agencies to development research. Sub-Saharan Africa's share is summarized in Table 1 below. Approximately **$620 million CAD per year is designated as being directed to supporting research in sub-Saharan Africa**, and IDRC provides about 6% of it.

Table 1 :

AVERAGE ANNUAL* DISBURSEMENTS TO DEVELOPMENTAL RESEARCH IN SUB-SAHARAN AFRICA BY TYPE OF DONOR AGENCY

	(CAD $ mn)
Bilateral	462.6 (75%)
Multilateral	127.4 (20%)
Foundations	30.1 (5%)
TOTAL	**620.1 (100%)**
IDRC	**35.6 (6%)**

(*) Late 1980s.

Although precise figures are not available on how donors allocate their support to **research by sector**, indications are that the following (in decreasing order) receive the major proportion of funds: agricultural and food production; health; population; higher education; and environmental degradation and natural resource management.[2] All of these are included in the list of development problem areas identified by the divisions in Section 5.1 and are consistent with the Centre's allocation of resources by program. IDRC, therefore, is working in areas where there is also heavy involvement by other donors. There are indications that massive increases in funding to

1 This and the following information on the approaches of other donors is based on the agency profiles in Annex C.

agricultural research from the World Bank and from USAID are likely in the near future. For example, USAID expenditures for agricultural research are increasing from $38 million US in 1988 to $80 million US in 1989. This may have important implications for several IDRC programs in sub-Saharan Africa.

Overall, about 70% of the research support going to sub-Saharan Africa from other agencies **goes to 10 countries**, representing approximately 57% of the region's population. The Centre concentrates 71% of its support in 10 countries. Seven out of the 10 countries on both lists are the same. They are: Kenya, Cameroon, Nigeria, Zimbabwe, Tanzania, Ethiopia, and Senegal.

Based on project and program descriptions and their problem orientation, the other donor agencies, like IDRC, support primarily **applied research**.[1] Donors are therefore implicitly treating sub-Saharan Africa as a basic science adopting region.

There also appears to be an emphasis on the **"hard" as opposed to the "soft" sciences**. As defined on page 8 of PPR X (1988), the outputs of the "hard" sciences tend to be technologies such as handpumps and dehullers, biological products such as seed varieties, and health products such as contraceptives and vaccines. The "soft" sciences tend to produce knowledge for public education or policy advice and other forms of knowledge which have a direct or indirect effect on the application of solutions to development problems.

With the information available, it can be estimated that, of the funds designated by donors for research, at most one third goes **directly to African researchers** working in their own countries. Much of the balance appears to go to non-national research institutions, to expatriates working in African institutions or in their own countries, or for training outside of Africa. As examples: British ODA, French Aid and the German GTZ often use their own nationals to work directly in African research programs; and African scientists often participate as collaborators with principal researchers funded by USAID and SAREC.

The heavy use of training abroad for African researchers and scholars, the large proportion of funding which goes to support expatriates, and the dominance of non-national recipient institutions seem to contradict the statements of donor agencies on the need to build indigenous scientific capacity. The USAID focuses the bulk of its agricultural research funding on a small group of countries which it has defined as Technology-Producing Countries (TPCs). Countries which do not have the capacity to

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[1] The Frascati manual defines applied research as "original investigation to acquire new knowledge directed primarily towards specific, practical aims or objectives"; and basic research as "work designed to acquire knowledge without any particular application or use in view".

generate their own technologies must rely on the research outputs of the TPCs. In general, sub-Saharan Africa is seen by many donors as a "technology adapting" region and this may explain why it receives a low level of support for strengthening indigenous scientific leadership.

Many donor agencies recognize the need for **collaborative research** support as an important means to create the critical mass necessary to tackle the development problems facing the continent. Much of USAID's funding in Africa goes to collaborative research support programs in which US scientists, especially those in US land-grant universities, provide scientific and technical advice and training, and work with developing country scientists on specific projects of common interest. There is less active support for collaboration among indigenous institutions although the necessity of regional research collaboration, particularly through networks, is generally recognized. One recent initiative by donor agencies, the Special Program for African Agricultural Research (SPAAR), although still in its early stages, is attempting to strengthen national research systems by coordinating initiatives and facilitating the exchange of information on donor activities.

Although **institutional support** was not claimed by most donor institutions as a priority, there is clearly a sense of its importance. In its strategy to strengthen African institutions, USAID sees sustained funding for at least 20 to 25 years as necessary, especially for its technology-producing institutions. Improvements in management and administrative capabilities and the creation of national institutional linkages are other features of USAID's institution-building approach.

1) Summary: Areas of Complementarity and Contrast:

- IDRC tends to concentrate its support in the same sectors and in the same limited number of sub-Saharan African countries as the other donor agencies.

- Like IDRC, other donor agencies tend to support applied as opposed to basic research.

- IDRC appears more evenly committed to both "hard" and "soft" scientific research than other donors.

- Unlike other donor agencies, IDRC support goes primarily to national institutions in sub-Saharan Africa.

- There is widespread recognition among donors of the need for African countries to collaborate with other countries in their research and technology adapting efforts. However, IDRC tends to be more active in fostering regional and South/South collaboration.

- For building indigenous capacity, IDRC's approach contrasts with the aggregate approach of the other donor agencies in terms of: support to national institutions for both research and training; non-reliance on expatriate research expertise, and its intention to provide long term institution-building support.

- Given the recent massive increases in funding from some of the large donors to agriculture, IDRC may have to re-assess the nature of its support in the heavily funded areas.

IV. Centre Experience in Sub-Saharan Africa

1) Patterns of Past Support:

Of the total of $472 million in IDRC project appropriations since 1970, an average of approximately **25%** went to sub-Saharan Africa (EARO and WARO)[1]. In recent years, the percentage has been higher with program appropriations in 1988/89 reaching **34%.**

Prior to 1979, WARO received a greater share of project appropriations but since 1980, the balance has tipped towards EARO. Averaged over the entire period, the two regions have received roughly equal shares (Annex A, Figure II).

Over the past eighteen years Centre support has been highly concentrated. While 38 of the 45 sub-Saharan African countries received project funding, **71%** of all grant funds were **concentrated in only 10 countries.** These 10 include 4 of the 5 largest countries and account for over half of the total population (57%), in sub-Saharan Africa. A similar pattern of country concentration occurs in the other regions also. In ASRO, 89% of project appropriations go to 5 countries representing 88% of the region's population; in SARO, India receives 67% of the region's appropriations (85% of the regional population); and in LARO 7 countries receive 69%.

Figure III in Annex A shows how Centre projects in sub-Saharan Africa are distributed by **type of institution.** Government institutions and universities carry out more than three quarters of the projects.

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[1] The statistical figures and tables on the patterns of past Centre support to sub-Saharan Africa are given in Annex A.

Centre support has also been concentrated in relatively few institutions both nationally and regionally. About **one quarter** of the support went to only **8** of the 190 **national** institutions supported, and over half of the funding to **non-national** institutions was concentrated in 7 out of the 55 institutions supported (listed in Annex A, Figure V). The ten national institutions with the most IDRC projects, all universities, are listed in Figure IV, Annex A.

IDRC has **collaborated with other donors** in seventeen percent of its sub-Saharan African projects since 1983 (Annex B). Nine percent involved major international (bilateral, multilateral or private) organizations and eight percent involved a variety of national and non-national agencies. To its projects with other major donors, IDRC contributed $16.4 million and the known donor contributions totalled $23.9 million. The major donor collaborators were **CIDA**, contributing $10.8 million for 17 projects; **Ford Foundation**, $7.5 million for 16 projects; **SAREC**, $4.5 million for 4 projects; **Rockefeller Foundation**, $.5 million for 7 projects; and **WHO**, $.3 million for 2 projects. Taking all projects with contributions from other agencies, the funding is split evenly between EARO and WARO. However, looking only at the projects involving major international donors, IDRC funding was split 2 to 1, and the other donors' funds were split 4 to 1 in favour of WARO. Analysis showed broad representation across Centre programs with 80% of the projects with collaborators distributed across 22 IDRC program areas.

2) Lessons Learned from Evaluations:

A review of a sample of project completion reports and Centre evaluation reports suggest that, in general, IDRC support has had positive effects on the research communities and target populations of sub-Saharan Africa. Support has been moderately successful in meeting both project and Centre objectives. The evaluation material covers a wide range of issues and cites many lessons. Several may be particularly relevant for future sub-Saharan Africa funding. Excerpts from evaluation reports are used to illustrate some of the following points.[1]

With regard to **strengthening national institutions**, the three most pervasive constraints are: i) lack of adequately trained staff for project leadership, technical expertise and research supporting services; ii) absence of national science and technology plans and priorities on which to base institutional programs; and iii) the need for stronger linkages between the research and research-using organizations.

[1] Full references to the reports from which excerpts were taken are in the bibliography.

> IMPROVING THE INSTITUTIONAL RELATIONSHIP BETWEEN RESEARCH AND EXTENSION SHOULD INCREASE ADOPTION OF RECOMMENDED PRACTICES....JOINT RESPONSIBILITY BETWEEN RESEARCHERS, EXTENSION WORKERS AND PEASANT ASSOCIATIONS FOR IDENTIFYING RESEARCH PROBLEMS AND MONITORING BOTTLENECKS IN THE USE OF RESULTS MUST WORK FROM TOP TO BOTTOM OF THE DECISION MAKING SYSTEM. (Ethiopian Science and Technology Commission [ESTC], p. 45)

In many cases, continuing core or infrastructural support from **other donor agencies** has facilitated IDRC-supported research. From many institutions' perspectives, indigenously-supported research programs are not possible in the foreseeable future. Therefore, stability and consistency in external funding for both research costs and infrastructure maintenance are essential to facilitate institution-building.

> THE FORD FOUNDATION AND IDRC HAVE PROVIDED MOST OF THE SUPPORT FOR CIRES.[1] THE DURATION AND CONTINUATION OF THAT SUPPORT IS PRAISEWORTHY. (Petit et al, p. 22)

> THE MISSION RECOMMENDS THAT PRIORITY BE GIVEN TO INSTITUTIONAL SUPPORT...RESEARCH FUNDING FOR NEW RESEARCHERS, A BASIC LEVEL OF SUPPORT FOR EACH RESEARCHER, THE POSSIBILITY OF A SABBATICAL YEAR FOR PRODUCTIVE RESEARCHERS, FUNDING FOR CIRES PURSUANT TO AN AGREEMENT ON MAJOR THRUSTS, AND ABOVE ALL THE ESTABLISHMENT OF INTERNAL MECHANISMS GUARANTEE THE QUALITY OF THE RESEARCH CONDUCTED. (Petit et al, p. 5)

Training has been a very active and successful area of Centre activity. In addition to scientific and technical training for researchers, recipient institutions also need support for training of staff in research-supporting functions.

> ...MANY FUNCTIONS AT SUA DO NOT OPERATE PROPERLY BECAUSE OF THE LACK OF ADEQUATELY TRAINED AND QUALIFIED STAFF (P. 24)... IDRC AND OTHER DONORS SHOULD CONSIDER PROVIDING ADVICE AND SUPPORT FOR TRAINING COURSES FOR RESEARCH SUPPORT STAFF...INCLUDING FIELD AND VILLAGE ASSISTANTS, TECHNICIANS, LIBRARY, SECRETARIAL AND ADMINISTRATIVE STAFF. (Evaluation of IDRC-Supported Projects at Sokoine University of Agriculture [SUA], p. 70)

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[1] CIRES - Centre ivoirien de recherches économiques et sociales. Côte d'Ivoire.

IDRC has always experienced demand for capacity-building support going beyond the context of the research project. In PPR VI the types of research-supporting services required in a research and development system were reviewed. Research management, dissemination of results, human resource development and management, bibliographic and other information services are some of the areas in which African institutions are experiencing difficulties.

> LACK OF DETAILED MANUALS IN ACCOUNTING, PROCUREMENT, INVENTORY CONTROL, PERSONNEL MATTERS AND OTHER SUPPORT SERVICES WITHIN THE RESEARCH INSTITUTIONS HAS ADVERSELY AFFECTED PERFORMANCE.... FINANCIAL ASSISTANCE REQUIRED FOR THE PREPARATION AND IMPLEMENTATION OF MANUALS ON SUPPORT SERVICES AND RELATED TRAINING SHOULD BE SOUGHT FROM FUNDING AGENCIES INCLUDING IDRC. (ESTC, p. 82)

> IDRC HAS ASSISTED SUA IN THE PROVISION OF BOTH VEHICLES AND SPARE PARTS, AND THIS ASSISTANCE HAS BEEN INSTRUMENTAL IN HELPING SUA DEVELOP ITS FIELD RESEARCH CAPABILITY. NEVERTHELESS, IT IS THE AREA OF RESEARCH SUPPORT SERVICES STILL MOST FRAUGHT WITH PROBLEMS. DRIVER TRAINING AND SUPERVISION AND MANAGEMENT OF THE MAINTENANCE WORKSHOP APPEAR TO BE MAJOR PROBLEMS. (SUA, p. 53)

> FIRST AND FOREMOST, WE FEEL IT IS ESSENTIAL TO REVIVE AND DEVELOP A PUBLICATIONS PROGRAM... THE MEANS MUST BE FOUND TO ENSURE AN APPROPRIATE LEVEL OF SHARED SERVICES (OFFICE, LIBRARY, COMPUTER EQUIPMENT, TRANSPORTATION) SO THAT PHYSICAL CONSTRAINTS DO NOT RESTRICT THE PRODUCTIVITY OF RESEARCHERS. (Petit et al, p. 2 - 3)

IDRC's experience shows that **regional organizations** can effectively fulfill regional research and training mandates. Sustained and effective scientific cooperation across national boundaries requires careful development and attention to prevent and iron out difficulties.

Certain funding modalities complement project support in the sub-Saharan African research environment. Here, as in other parts of the world, the Centre has found **networks** of Third World scientists useful to overcome institutional or national limitations by: sharpening technical skills; developing research methodologies; helping researchers overcome intellectual isolation; providing channels for the sharing of materials and research results; and creating linkages for further collaboration. African researchers have participated actively in both formal research networks and in less formal networking and coordination activities centered around

various crops, technologies, production methods, policy issues, diseases, etc. Contact between scientists in Africa and those in other developing regions, while fairly modest, yielded many positive benefits and could be expanded.

Small grants programs were found to be effective in reaching individual researchers who otherwise might not have access to research funding, and flexible enough to focus on empirical studies of local importance. They provide opportunities for institutions to test younger researchers without making long-term commitments. According to Centre policy, small grants programs should have adequate research supervision and provision for disseminating results. This requires a major commitment, both technical and administrative, from the coordinating institution or individual. While tending to have a high impact on individual careers and research skills, small grants programs are not seen as contributing significantly to building institutional research capacity.

> A KEY ADVANTAGE OF THE SMALL GRANTS MECHANISM, WHEN CAPACITY BUILDING IS THE MAIN OBJECTIVE, CAN BE THE INTEGRATION OF TRAINING AND RESEARCH EXPERIENCE...THE EFFECTS OF TRAINING PROGRAMS WERE UNDERMINED WITHOUT SUBSEQUENT RESEARCH FUNDING TO CONSOLIDATE THE SKILLS TAUGHT. (A review of Small Grants Programs, OPE, p. 38).

V. Strategic Issues for IDRC in Sub-Saharan Africa

In spite of the lack of precise information on the amount and use of research resources in sub-Saharan Africa, the available evidence on circumstances in the region justifies giving special consideration to how best to support research there. **The central question for this paper is whether, given sub-Saharan Africa's particular circumstances, IDRC's current policies and procedures should be altered to make them more responsive to and effective in the region.** This section addresses several corporate level policy issues and suggests strategies to facilitate the formulation and implementation of specific program responses. Since development needs cut across disciplinary and national boundaries, the orientation of Centre programs will depend also on plans formulated from regional perspectives and on cooperation among programs and units across the Centre.

1) Development Problems of Primary Concern:

In discussing Centre strategy, the members of the Program Committee found it useful to agree on the main development problems which guide the setting of

research programs for sub-Saharan Africa. A Centre strategy for sub-Saharan Africa should assist its program divisions to address these substantive areas of concern more effectively.

- **Environmental change and ecological degradation:** (pollution, desertification, deforestation) necessitating the development of sustainable agricultural systems, resource management skills, soil conservation measures, and alternative pest and waste management.

- **Human resources development:** the need to foster the skills and the institutional environments necessary for research on development problems.

- **Government policies and programs:** this is a broad area including policy environment, and government management of development programs.

- **Economic problems:** at the macro-economic level this includes national debt, economic restructuring, terms of trade.

- **Access to food:** the production, storage and distribution of food; nutrition; food security and famine.

- **Public health:** including infectious and other diseases affecting large, vulnerable groups; the sustained provision of public health services and resources management.

- **Population pressures:** aggravating the existing inability to fulfill basic needs.

- **Income generation and employment creation:** the development of value added production systems, access to economic opportunities.

- **Political violence and military conflict:** as some of these areas are receiving heavy support from other donor agencies, the Centre will need to ensure that its programs are indeed filling essential gaps.

2) Objectives of a Strategy for Sub-Saharan Africa:

Finding sustainable solutions to these and other problems will depend, amongst other things, on the availability of indigenous scientific capacity. The current state of African research systems makes strengthening this capacity a priority at both the human and the institutional levels. In general, a sub-Saharan strategy would have three primary objectives:

a) to seek out and **strengthen research capacity** for long term viability;

b) to facilitate the **sharing of research resources** and results within and beyond national boundaries; and

c) to promote the **application of research** to development problems.

3) Resource Allocation:

The allocation of financial resources among regions is the aggregate of a series of judgements made by Centre staff at the program level and by the Board of Governors. There is no set of quantitative criteria for fixing the optimum regional distribution. With sub-Saharan Africa now receiving 34% of **project appropriations** it would appear that, under current policy, IDRC's response to regional demand and absorptive capacity has been sensitive to sub-Saharan Africa's acute needs.

This sensitivity is also reflected in the increasing share of the Centre's human resources allocated to sub-Saharan Africa. The proportion of Centre program staff allocated to the region increased from 36% to 46% between 1983/84 and 1988/89. In 1989/90, about 50% of professional staff outside of Ottawa will be posted in either WARO or EARO[1]. Whether this represents an appropriate allocation of Centre staff is, as with program shares, a question of regional emphasis within a global context.

The existing process for allocating financial and human resources by region has resulted in a significantly large share of each for sub-Saharan Africa. Balancing the regional allocation of Centre-wide resources is beyond the scope of this paper. It is proposed therefore that the current high level of resources allocated to sub-Saharan Africa be complemented by other strategic elements focused on delivering those resources to meet African requirements more effectively.

4) Fostering Scientific Collaboration:

Individually, most sub-Saharan African countries lack the economic and human resources to build and sustain diversified national research systems able to satisfy all their science and technology needs. As these countries share similar development problems and possess different and often complementary strengths,

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[1] IDRC 1989/90 Revised Program of Work and Budget, p. 27.

it is reasonable to attempt to create the critical mass required to address common problems by exchanging and sharing resources **across national boundaries**. The Centre could enhance the effects of its programs by building on potential strengths, reducing redundancies and eliminating support to non-viable entities. More effective division of labour and cooperation among international, regional and national research agencies could be fostered by making functional linkages a condition for some kinds of funding.

A Centre strategy to strengthen collaboration among national and regional institutions would be consistent with initiatives already being taken by African organizations and international donor agencies. Interest in scientific collaboration and "technology borrowing" is growing, although it is heavily dependent on external funding. African coordinating agencies such as AAU, CODESRIA, FAMESA, and SADCC are providing IDRC with information on, and opportunities for more effective support for these kinds of activities.

The Centre already uses a variety of ways to share research capacity among institutions. As some institutions become nodes of research strength, the creation and refinement of mechanisms for cooperation and sharing the benefits of increased research capacity will assume greater importance. Such linkages should not be limited geographically. South/South collaboration on a global scale has significant potential for sub-Saharan Africa.

5) Collaboration with Other Donors:

IDRC could build on its considerable experience of successful collaboration with the major international donor agencies in sub-Saharan Africa. Over the past five years, each 2 dollars from IDRC for jointly funded projects has been matched by at least 3 dollars from other donors.

There are both similarities and contrasts in comparison with the approaches of the other major donors. IDRC supports applied research in most of the same sectors and countries as the other agencies. However, Centre support is more evenly balanced between the "hard" and "soft" sciences, goes primarily to indigenous institutions and researchers, and is more favourable to South/South collaboration. Although IDRC's support to research in sub-Saharan Africa represents only about 6% of total donor support, it is the fifth largest research supporting agency in the region. IDRC's contrasting approach in several important areas gives its role in building indigenous capacity an importance disproportionate to the magnitude of its funding contribution. Therefore, it should be a regular practice at the program level to seek opportunities vis-à-vis the programs of other donors, to fill gaps and draw support to areas of importance.

If the current rough estimates of total annual funding to research in sub-Saharan Africa of about CAD $1.2 billion are correct, then the figures presented in section 3 would indicate that about half of this comes from external donor agencies. These agencies therefore have a very powerful influence over research agendas across the continent. The need for the coordination of donor activities and IDRC's role as a member of the donor community assume greater importance in this light.

6) Institutional Concentration:

In keeping with IDRC's mission and objective, the term "institution" refers to institutions which conduct research or research-supporting activities and which are functional, legally constituted organizations with the structure and processes to fulfill a particular mandate; and whose activities and outputs are valued by and assimilable within their social and economic environment. In some cases, IDRC support may be directed at a significant element of a larger institution, e.g., a Faculty within a University.

As indicated in Section 4.1, Centre support has concentrated on relatively few institutions in relatively few countries. This pattern reflects the individual responses of the various programs to the demands and opportunities encountered; it was not the result of a deliberate strategy or plan. Concentration of Centre support in institutions of high potential and encouraging their cooperation with other institutions would be highly compatible with the perspective on sub-Saharan Africa's research environment as outlined in this paper. IDRC could build on past experience with a more deliberate application of concentrated support in selected research institutions.

Centre policy on institutional concentration should not try to specify what types of institutions should be supported. General, more **functional** criteria could be established such as:

i) existing strength and future potential in a particular research area;

ii) orientation towards solving national and regional development problems;

iii) opportunities for interdisciplinary collaboration within the same institution;

iv) opportunities for synergism among Centre programs; and

v) readiness to collaborate with other institutions nationally and regionally.

Institutions in the same sector which do not receive project funding under these criteria could be linked to IDRC-supported research through various funding modalities such as networks, workshops and small grants programs.

This strategy would encourage divisions to concentrate a broader range of support on fewer institutions for longer duration, which, in the long run, might limit the number of countries in which Centre research support is provided.

7) Strengthening Institutions:

Among the research institutions on which IDRC concentrates support, some will have the potential to become significant national and regional foci for particular fields of research. Some of these will not be able to realize their potential due to particular capacity-building needs which project or program support alone cannot address. Such institutions would be candidates for receiving more specific capacity-building support from IDRC. Selection of institutions for such support would be based on divisional program priorities and criteria but with a view to maximizing coherence, efficiency and synergism among Centre funded activities. Opportunities for taking advantage of other donor activities could also be sought. Regional office planning and collaboration would be primary mechanisms in the selection of institutions for institutional support.

In 1987, the discussion paper, "Approaches to Strengthening Research Institutions," provided some guidance for developing institutional support activities. Centre experience since then indicates that, to achieve significant and sustainable results, institution-strengthening needs to be long term, systematic and planned. Careful attention should be given to:

i) assessment of an institution's needs and its research environment;

ii) developmental or introductory phases leading, incrementally if necessary, to larger more complex phases of support (i.e., project to program to institutional support);

iii) sequencing the involvement of different Centre units or programs;

iv) the importance of strengthening research supporting services; and

v) clarifying relationships with other national, regional and international organizations in contributing to national development programs.

8) Human Resources Development:

There are four main concerns related to the development of human resources which should guide IDRC's strategy in sub-Saharan Africa.

- **Strengthening the Institutional Base**

  To attract, hold and motivate good researchers in Africa, there is a need to provide a viable, stable and productive research environment. Sub-Saharan Africa has experienced a proliferation of research institutions and trained researchers in the absence of adequate funding to support such growth. To achieve sustainable strength, some concentration of both national and external resources will be required. The foregoing sections on institutional concentration and strengthening and on scientific and donor collaboration suggest an approach for IDRC which, if reinforced by national policies and decision-making, could help create a stable working environment for researchers. To the extent that this is achieved, it will make existing human resources more productive and could encourage skilled Africans working abroad to return home.

The concentration of Centre resources in fewer institutions for a longer period of time requires knowledge about the existing research and training capabilities in sub-Saharan Africa. This information would be necessary to construct inventories and make decisions about where human resources development activities should be placed and how to share the benefits. At least two regional African organizations are currently engaged in collecting and analyzing such information with IDRC support.

- **Indigenization of Training**

  One constraint in the African research environment is the dominance of practices which are not consistent with African institutions and traditional structures. African research institutions need to be more at home in their respective countries. Focusing training and curriculum development within and among these countries helps make the training received by African researchers consistent with indigenous research needs and working conditions. Therefore, to reduce education costs, to make the training relevant and to help create the institutional structures compatible with the social, political and technological environments in African countries, the

Centre should make every effort in its development of human resources to create and utilize training capacity within sub-Saharan African countries.

- **Greater Responsiveness in Training**

  Human resources development in African institutions is not simply a matter of training more researchers. What is required is to identify and respond to scientific and technical training needs, taking both level and content of training into consideration. As the strength of institutions depends also on research-supporting functions such as policy and decision-making skills, research planning, and a variety of research-supporting services such as accounting, stock control, and equipment maintenance, training in these areas is often required. Without a broader base of such skills throughout the research system, its research institutions will not be viable. The Centre, therefore, needs to be flexible and innovative in identifying and responding to specific training needs, and in assisting African countries to create the training capacity to respond to such needs.

9) Funding Mechanisms:

The Centre has a range of funding mechanisms which appear adequate to respond to the various research and capacity-building needs of sub-Saharan Africa. Their effective application to conditions in sub-Saharan Africa may require some clarification and further refinement.

Project support alone can be inadequate to strengthen institutional capacity and may in fact have deleterious effects. Indications are that this may be particularly true for sub-Saharan Africa. **Project, program, and institutional support** are the three main funding mechanisms available and program staff should be encouraged to give careful consideration to selecting the one appropriate to an institution's existing strengths or needs, and to determining a realistic time period for support.

The Centre has found **small grants** programs to be useful for giving young researchers initial on-the-job experience, and for building capacity in institutions to administer such programs. Administering a small grants program can heighten an institution's regional profile and gain it recognition nationally. This modality has been successfully adapted to research capacity-building in sub-Saharan Africa.

10) Budget Flexibility:

African institutions often lack a wide range of basic requirements for carrying out research: equipment, buildings, management skills, bibliographic services. There is a great need in sub-Saharan Africa for augmenting the salaries received by researchers. There are still many countries where monthly salaries are

inadequate for subsistence. Salary supplements are often essential to enable researchers to devote substantial amounts of time and energy to carry out research. Overhead expenses in Africa are also a heavy burden on many institutions.

Being too rigid with the line items in project budgets merely exacerbates the deficiencies of the project modality. Therefore, budgets should allow expenditures in critical areas, such as overhead, support services, equipment, staff development and salaries. For large scale infrastructural or capital expenditure components, the participation of other donors should, of course, be sought.

The budgetary distinction between the Centre administered portion (CAP) and the recipient administered portion (RAP) may require refinement. There are situations in Africa, and perhaps elsewhere, where the only assistance needed in procuring equipment is actually paying the funds; shopping and tendering can be done by the recipient. Consideration could be given to, in addition to CAP and RAP, another category called Centre Paid Funds "CPF" in which the Centre disburses equipment costs to the suppliers on behalf of the recipient institutions.

11) Research Utilization:

Sub-Saharan Africa presents special problems with regard to research utilization. There are very few channels linking research to development. In comparison with other developing regions, African scientists and educated elites are seen to have inadequate influence on government science and technology policies and on national development programs. The technological or entrepreneurial base to absorb and apply research results is weak. Successful instances of indigenous research influencing technological innovation and production exist mostly with a few exportable commodities such as palm oil, tea and cocoa and only where there was cooperation between researchers and producers. However, across the wide variety of domestically important food crops and the vast range of ecological conditions under which they are produced, few technological breakthroughs have been recorded.

Centre staff are already working to link research users and research output delivery organizations to IDRC-funded activities; to encourage the creation of mechanisms for disseminating and applying research results. Much of this work is in exploratory stages and there is no evidence yet to use as a basis for separating specific African concerns from general Centre policy on utilization. To redress the lack of influential scientists and research managers, the Centre could support human resources development going beyond research and research-supporting skills to include technology policy planning.

VI. Conclusions: The Proposed Strategy

Since 1971, sub-Saharan Africa has received a large share (averaging 25%) of IDRC's program funding. Over the past few years, the Centre has increased its allocation of both human and financial resources to the region. In 1988/89 sub-Saharan Africa received over one third of project appropriations; and almost half of Centre professional staff outside of Ottawa are posted to one of the two regional offices in sub-Saharan Africa. These increases in allocation of Centre resources have resulted from Centre sensitivity to conditions in sub-Saharan Africa and to demands for research funding.

The appropriateness of the disciplines and skills represented by the IDRC staff located in sub-Saharan Africa has not been assessed in this paper. Such assessment would be part of the development of program strategies for the region. As the first stages of the Centre's nascent regional planning system evolve, strategic frameworks for EARO and WARO are being formulated in the context of this overall regional strategy. These will be fed into the program planning process and decisions made on the kinds of staff and the directions of program activities that correspond most closely to African requirements. The following strategic elements, which incorporate the views of our African partners, will guide the way in which programs will be planned and implemented. **Specific elaborations to the main recommendations resulting from the consultative process are shown in the boxes below:**

1) Fostering Collaboration:

A corollary of strengthening capacity among the fragile research systems in sub-Saharan Africa is the need to make the benefits available to countries and institutions throughout the region. Given that the needs for research output in sub-Saharan Africa extend far beyond the indigenous capacity to produce it, the Centre should pay particular attention to supporting activities which link the research institutions producing knowledge to those which need to use it. There is already considerable experience with a wide variety of linking mechanisms (such as research and information networks, training and small grants programs, etc.) to achieve this. As the Centre works more consciously to foster the sharing of research resources and results among national and regional agencies, refinements in existing practices and the creation of new mechanisms can be expected. Opportunities for research and training linkages and exchanges with institutions in other developing regions should be explored. The growing research strength in Asia and Latin America could provide a valuable resource for sub-Saharan Africa.

Additional recommendations posed by African researchers:

IDRC should foster greater cooperation among African universities. This could involve joint research projects, student exchange, common training programs, visiting professorships and fellowship programs and the establishment of documentation systems. In order to facilitate such collaboration, language training in French and English should be provided.

2) Working with Other Donors:

Collaboration and coordination with other agencies should be an essential component of IDRC's strategy for sub-Saharan Africa. IDRC's focus on building indigenous scientific capacity and linkages complements the approaches of the other donors and opportunities should be sought in all activities to draw on or complement their research-supporting activities. Even where the scale of other donor support is massive, IDRC may have an important role to play in providing a missing element which is necessary for the support to be effective. Conversely, the Centre may need to find funding partners to complement its support to particular institutions or networks. Coordination with other donors in terms of generating and exchanging information on strategies and funding patterns would greatly facilitate such cooperation.

Additional recommendations posed by African researchers:

Collaboration with other donors should not result in weakening IDRC's responsive philosophy and collaborative approach, especially the flexibility which enables the Centre to disburse funds to researchers directly and promptly.

3) Institutional Concentration and Strengthening:

Without it being deliberately planned, up to now the process of resource allocation has concentrated Centre project support in relatively few institutions in relatively few countries. A Centre strategy for sub-Saharan Africa should build on this pattern by encouraging Centre programs to concentrate their projects in institutions with actual or potential research strengths, long term viability and a high probability of cooperation with other institutions within the country and in the region.

One effect of more deliberate concentration in particular fields, in deliberately selected sub-Saharan African institutions will be that, over time, the Centre will support research in fewer countries, and will fund major projects in fewer institutions. Efforts to foster regional cooperation may then be necessary to spread the benefits of concentration across a larger number of institutions through networks, workshops and other linking activities.

Among those where it is concentrating support, there will be institutions facing constraints which the Centre could address through specifically designed capacity-building measures. Where there is a high probability of success in creating a viable national research institution able to play a regional role, institutional support should be considered. Such support would be systematic and planned, based on careful assessment of the needs of the institution. Institution-strengthening activities could range in intensity from relatively straight forward project or program support to the multi-dimensional support referred to in Centre planning documents as Integrated Support for Research Institutions (ISRI).

Additional recommendations posed by African researchers:

The principle of concentrating IDRC resources in a few institutions is acceptable. However, to ensure that weaker institutions are not neglected and also that the benefits of concentration spread beyond the confines of the host institution/country, it is proposed that selection of key institutions be based on such criteria as quality of leadership, commitment to long term research effort, willingness to collaborate with other institutions and equitable distribution of benefits nationally and regionally. Furthermore, in countries where there is a large concentration of IDRC projects, there should be emphasis on building research management capacity.

4) Human Resources Development:

Appropriately trained staff are vital in building an effective research system. Equally important are viable, productive institutions which attract and motivate researchers and provide them with a stable working environment. **The institution-strengthening and the human resource development aspects of the strategy are mutually inter-dependent.** Consequently, Centre activities in sub-Saharan Africa should seek opportunities for: (i) strengthening the institutional bases for both research and training; (ii) the indigenization of training; and (iii) tailoring training to the technical and managerial needs of the institution.

Although IDRC does not use technical assistance in the same way as the larger donors, there are elements of it in the Centre's approach to human resources development which are consistent with the principles of indigenization and institution-building. Through the collegial relationships which are often possible with program staff, researchers may receive encouragement and some informal technical training. The use of project advisors and network coordinators, usually scientists in the region, also makes technical advice readily available to participants in IDRC-funded projects. Cooperative projects, used by all divisions to link developing country and Canadian researchers, may also contain elements of technical assistance but the basis of the projects is collaboration between equal partners in a joint research endeavour.

Additional recommendations posed by African researchers:

When interpreting the existing Centre Policy on Salary Supplementation, the special needs of SSA research institutions should be taken into consideration and IDRC should consider providing special rates of allowances and honoraria to researchers working on IDRC supported projects.

5) Other Strategic Elements:

To make the strategy outlined above, effective, the following elements are necessary:

- That institutional concentration may entail sustained support to particular institutions over longer periods (10 to 15 years). N.B. It should be clear that, in recognition of the deficiencies of short-term project funding, the Centre can state its strategic intention to provide long-term support, but is not in a position to make long-term financial commitments to specific institutions or countries.

- That the full range of funding modalities be available to meet the needs of specific sub-Saharan African institutions. These would include project, program, integrated and core support to institutions, networks, workshops, and small grants programs. The appropriate funding mechanisms would be applied not only to institutions of Centre concentration, but would also be used to extend the fruits of concentration to other institutions.

- That, in order to respond to the full range of basic requirements for carrying out research, the Centre give consideration to all budgetary items which may be required by institutions such as salary supplements, overhead expenses,

equipment purchases, technical and administrative staff development programs, including training and sabbaticals.

- That the Centre help identify and be willing to respond to an institution's needs for the full range of research-complementing services, including the publication and dissemination of research results, research management, research utilization activities, accounting systems, materials maintenance, etc.

Additional recommendations posed by African researchers:

IDRC should: i) assist national and regional organizations in patenting original products resulting from their scientific endeavour;

ii) explore with CIDA and other donors possibilities of providing investment loans to entrepreneurs wishing to adopt research results from IDRC supported projects; and

iii) support with equipment and management, pilot production units seeking to confirm the utility of results from IDRC funded research.

ANNEX A

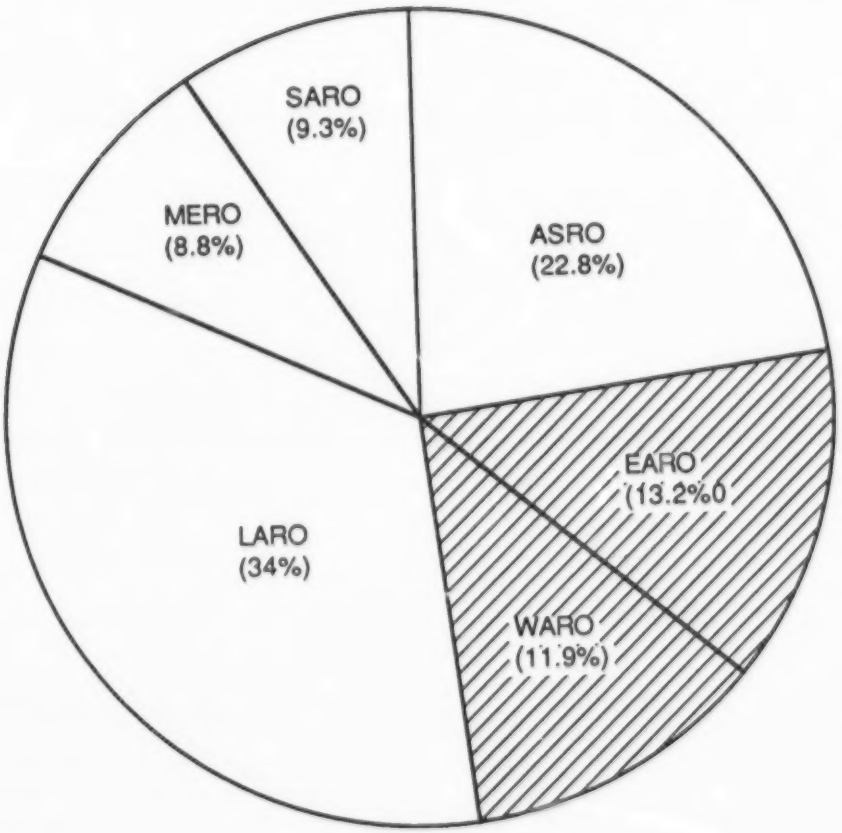
Trends in Support to Sub-Saharan Africa

Tables and Figures

Figure I:

Distribution of Centre Project Appropriations by Regional Office

(1971/72 - 1987/88)



Sub-Saharan Africa SSA (25.1%)

Figure II:

Proportion of Centre Project Appropriations in the WARO and EARO Regions

(1971/72 - 1987/88)

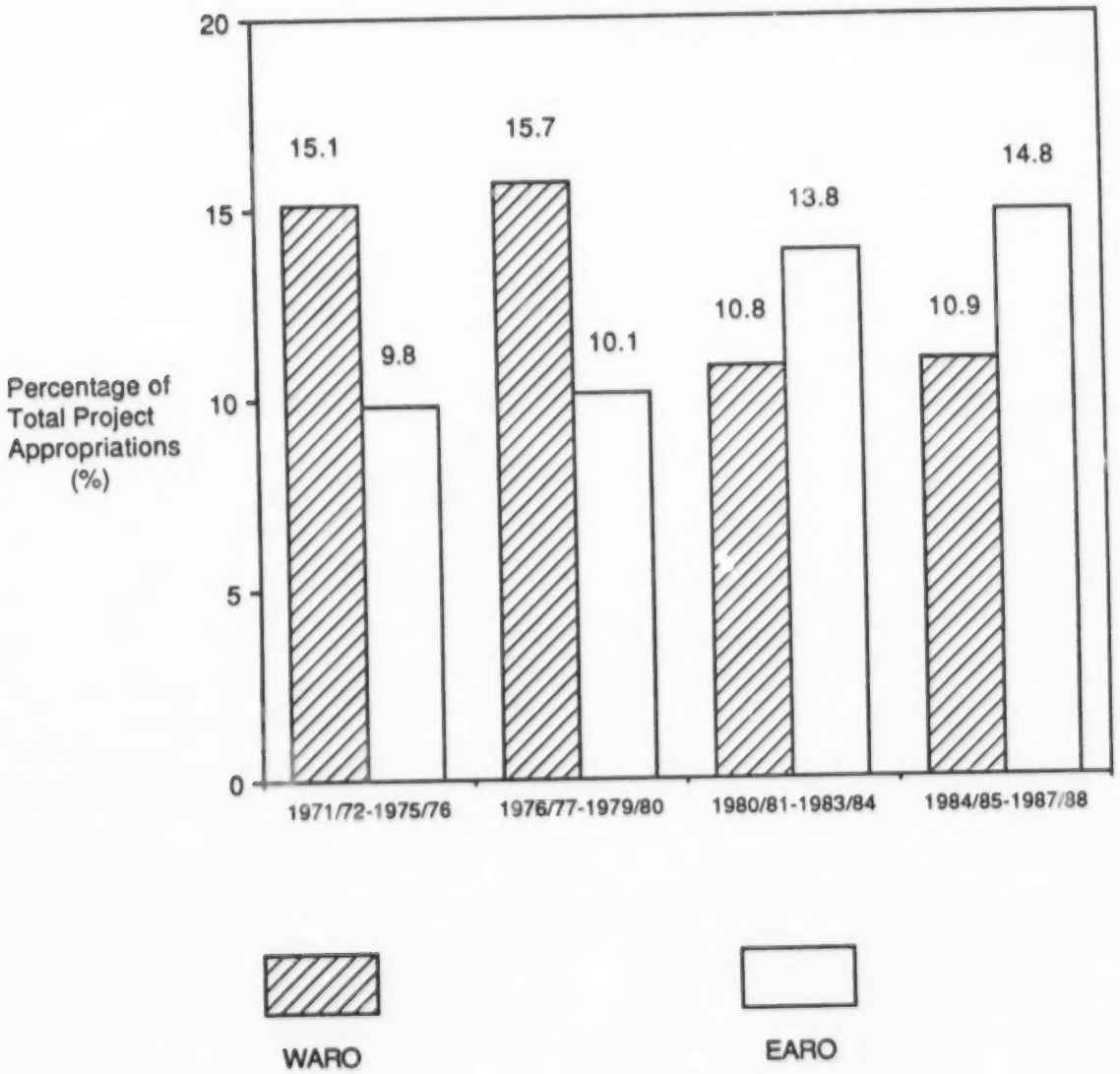
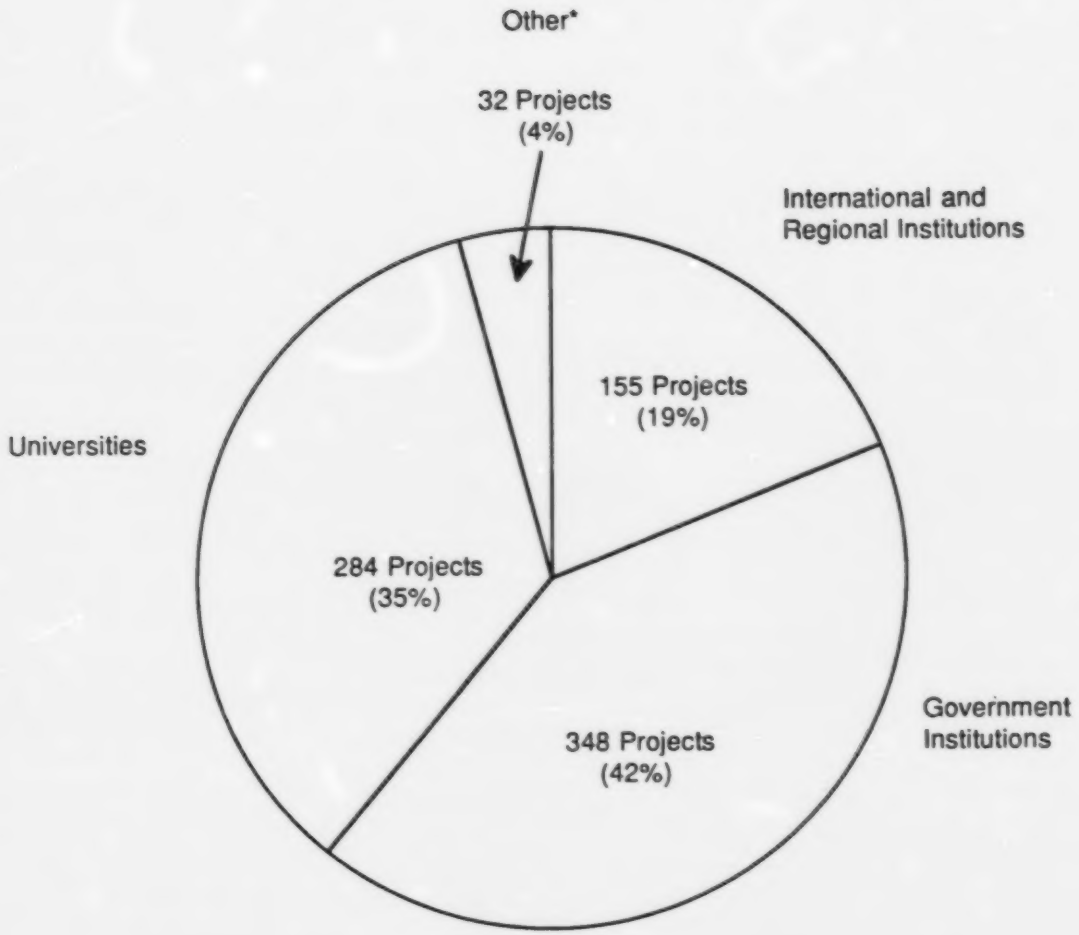


Figure III:

Distribution of Projects in sub-Saharan Africa, by Type of Institution

(1971/72 - 1987/88)



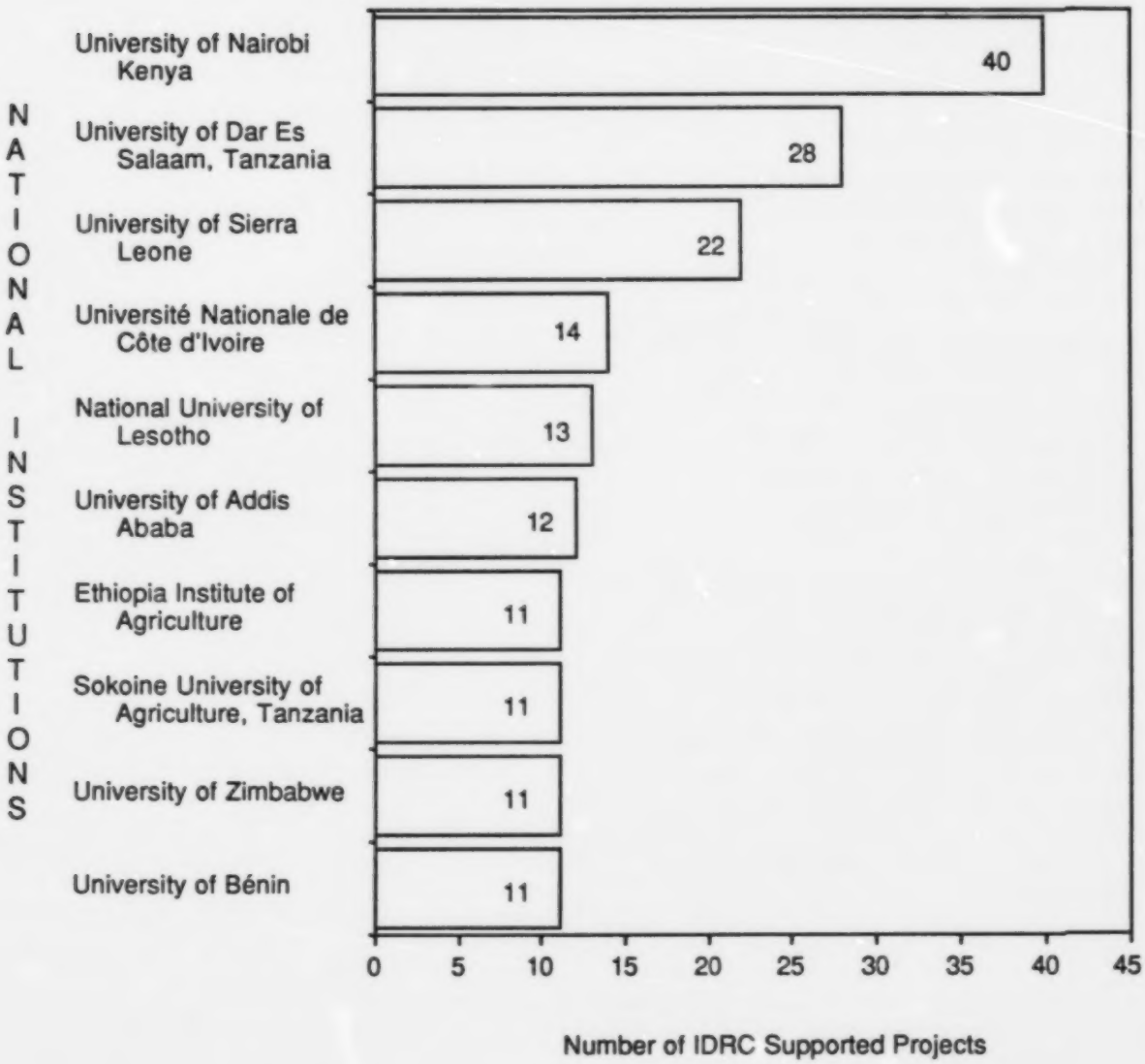
Total Projects = 819

* Consists Primarily of Non-Governmental Organizations (NGOs) and Professional/Scientific Associations.

Figure IV:

The Ten National Institutions in sub-Saharan Africa with the most IDRC Projects*

(1971/72 - 1987/88)

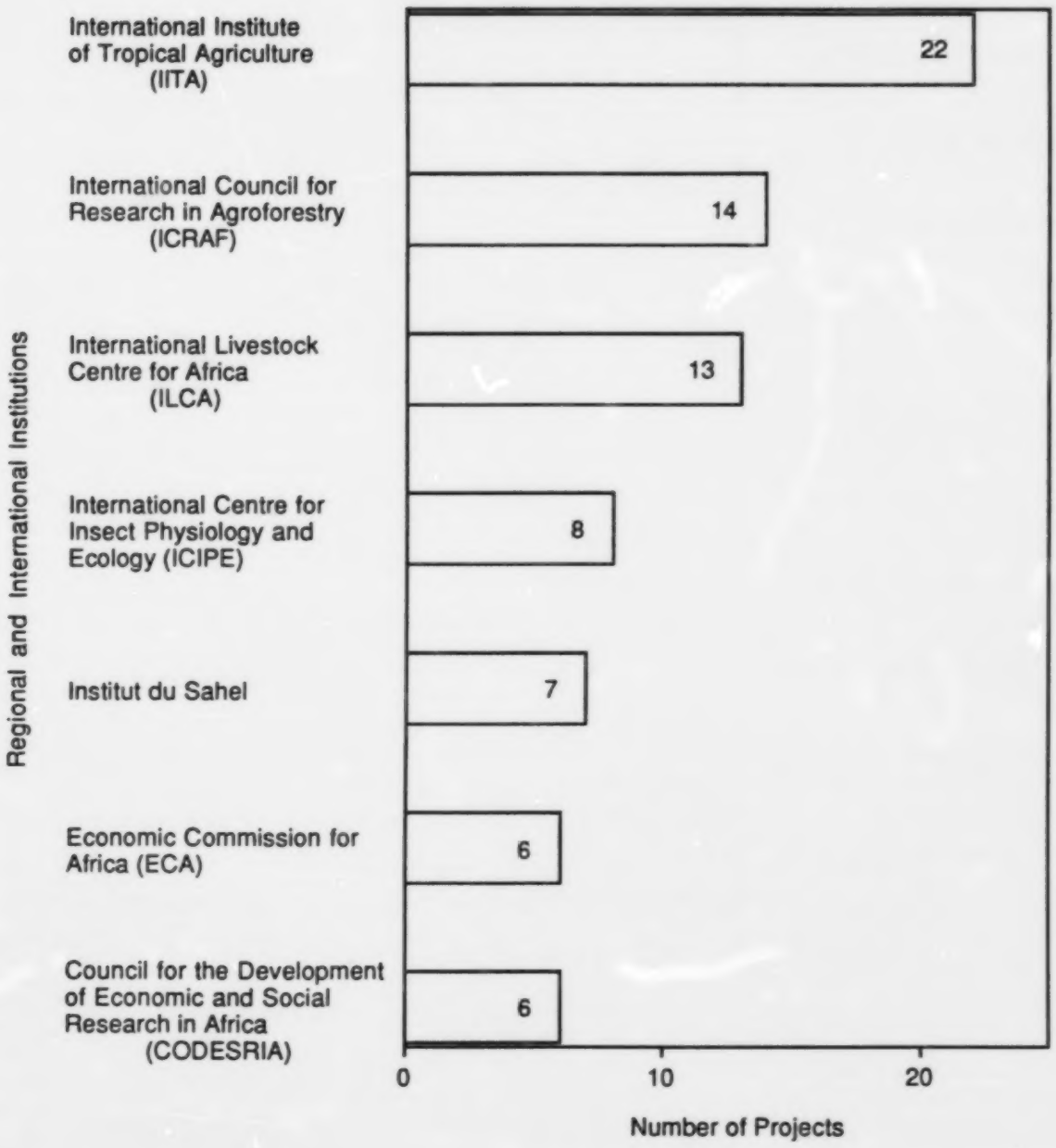


*The remaining 491 projects have been supported through 180 other national institutions.

Figure V:

Regional and International Institutions in sub-Saharan Africa with the most IDRC's Projects*

(1971/72 - 1987/88)



* The remaining 82 projects have been supported through 48 other non-national institutions.

Figure VI:

Distribution of Projects with National and Non-National Institutions in sub-Saharan Africa, by Country

(1971/72 - 1987/88)

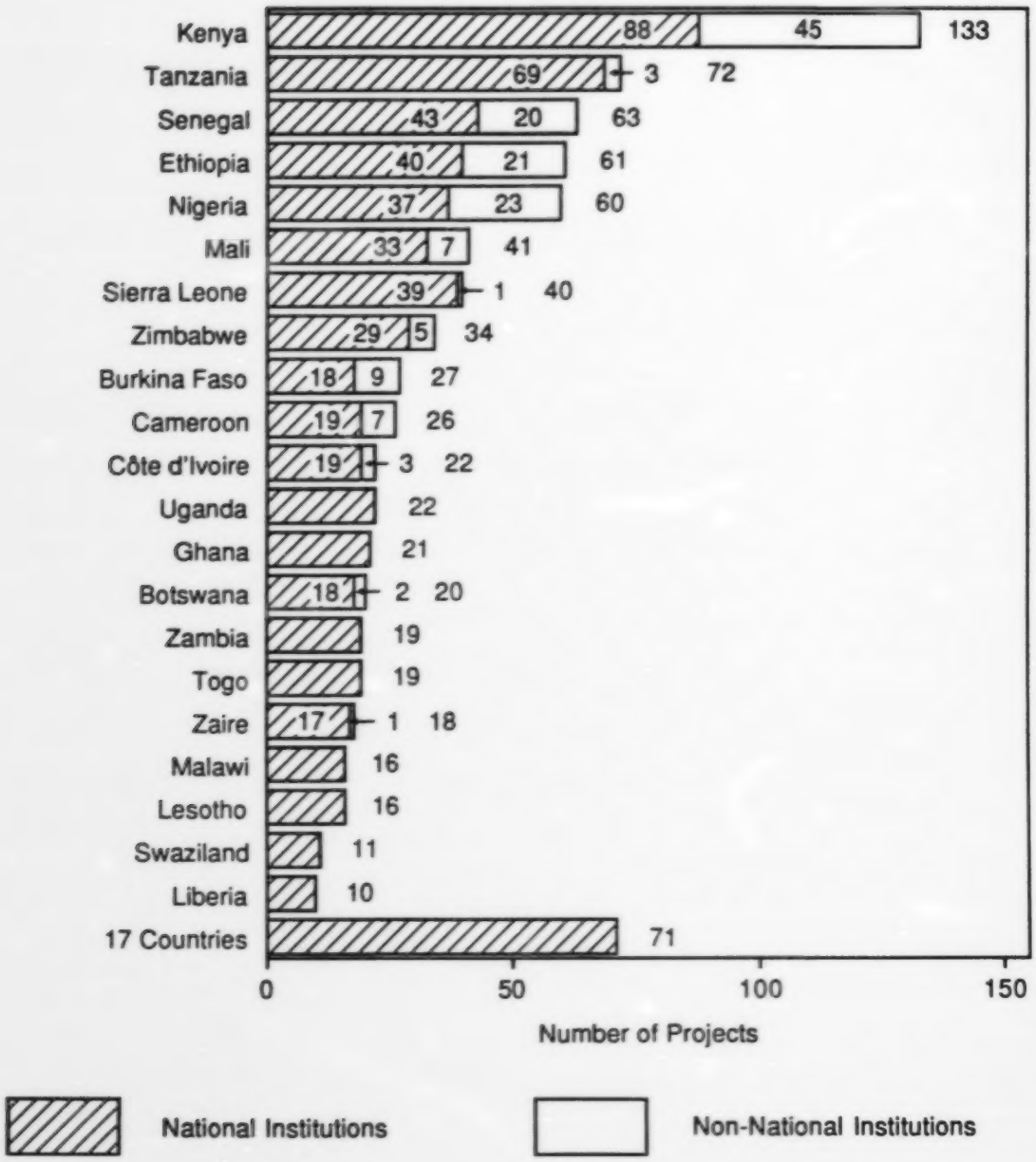


Figure VII:

Total Number of Project Phases and Number of Phase II (or More) Projects Approved in SSA

(1971 - 1987)

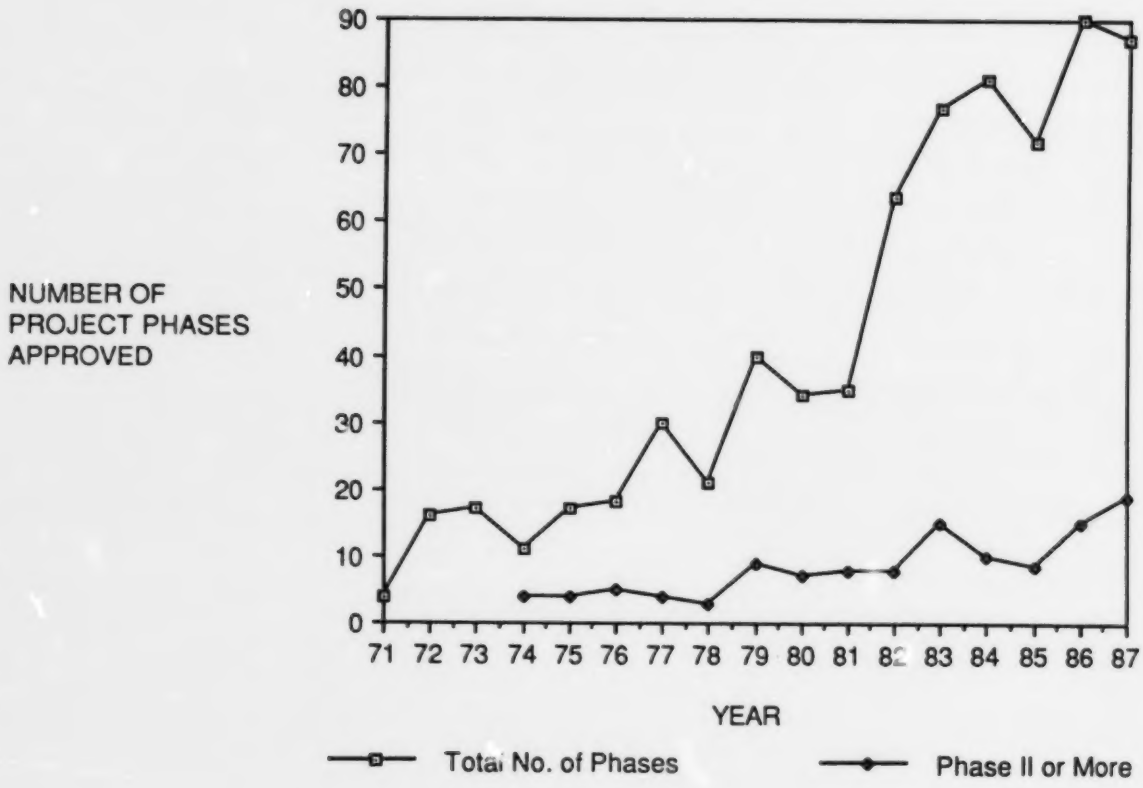


Table 2

Proportion of Projects supported in IDRC's "top ten" sub-Saharan African Countries, by Division

(1971/72 - 1987/88)

Division	Percentage of Projects in "top ten" SSA countries
Agriculture, Food and Nutrition Sciences	68%
Communications	83%
Fellowships and Awards	83%
Earth and Engineering Sciences	73%
Health Sciences	64%
Information Sciences	69%
Social Sciences	64%
Special Program Activity (SPA)	71%
Average	72%

Table 3

Average duration of project phases in sub-Saharan Africa and the rate of change (1971/72 - 1987/88)

Fiscal Year Periods	Average Length of Project Phase*	Rate of Change	
	(Months)	(Months)	(%)
1971/72-1975/76	44		
		-5	-11%
1976/77-1979/80	39		
		-5	-13%
1980/81-1983/84	34		
		-14	-41%
1984/85-1987/88	20		

* Duration of each project phase as estimated in each project summary.

ANNEX B

IDRC Collaboration with Other Donors

IDRC COLLABORATION WITH OTHER DONORS[1]

Seventeen percent of IDRC's projects in sub-Saharan Africa involved collaborators. Numerically, this accounts for 103 out of a total of 595 projects. These collaborative projects received 29 percent of IDRC's funds to sub-Saharan Africa or $30.1 million out of the total agency financial contribution of $107.2 million. Nine percent of IDRC's projects (or 54 projects) involved major international donors[2], and 8 percent involved non-national agencies and non-recipient national collaborators.

Financial Contribution

Regional breakdown of IDRC and major international donor funding on project collaboration (in millions):

Contributor	WARO	EARO	TOTAL FUNDS
IDRC	10.5	5.9	16.4
Major international donor[3]	19.1	4.8	23.9
Total Collaborative Contribution	**29.6**	**10.7**	**40.3**

The total collaborative financial contribution ($40.3 million) was comprised of 41% ($16.4 million) IDRC dollars and 59% major donor dollars.

IDRC divided its funding 2 to 1 between WARO and EARO[4] while major donors split their funding 4:1. The combined IDRC and major donor funding favoured WARO with a 3:1 ratio as 73% ($29.6 million) of the funding was allocated to WARO and 27% ($10.7 million) to EARO.

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[1] Data was collected for SSA over the 1983/84 to 1989/90 period, from PROMIS II, printed May 26, 1989.

[2] The target agencies are bilateral: USAID, GTZ, French Aid, British Aid, CIDA, NUFFIC; multilateral: World Bank, UN Agencies; private foundations: Ford, Rockefeller, Carnegie, IFS, Winrock.

[3] This figure excludes 8 projects (4 WARO, 4 EARO) for which financial information is not available.

[4] This contrasts to a 1:1 ratio funding between WARO and EARO for all IDRC collaborative projects. That is, of the 103 collaborative projects, IDRC allocated 15.8 million to WARO and 14.9 million to EARO.

Institutional Breakdown of Major Donors' Contributions

Funding to IDRC Projects by Major International Donor Category

Bilateral	$15.3 million	64%
Private	$ 8.0 million	34%
Multilateral	$ .56 million	2%
TOTAL	**$23.9 million**	**100%**

Ranking of the Top 5 Major International Donor Contribution to IDRC Projects

Organization	**Contribution ($m)**
CIDA	10.8
Ford	7.5
SAREC	4.5
Rockefeller	.5
WHO	.3
TOTAL	**23.6**

ANNEX C

Annual Financial Disbursements for Development Research in Sub-Saharan Africa by Type of Donor Agency

Annual Financial Disbursements for Development Research in sub-Saharan Africa by Type of Donor Agency[a]

Donor Agency by Type	Total Research Funds to LDCs (CAD millions per year)	Sub-Saharan Africa's Share
Bilateral		
USAID	374.9[b]	119
BOSTID	2.6[c]	0.4
SAREC	56.7[d]	14.8
French Aid	N/A	111.9[e]
U.K. ODA	58.8[f]	22.3
CIDA	N/A	18.2[g]
GTZ	N/A	16.2[h]
Other[1]	N/A	124.2
IDRC[2]	103.6	35.6
Sub-total		462.6 (74.8%)
Multilateral		
World Bank	N/A	111.9[i]
UNDP	279.7	12.8[j]
Arab Financed Agencies	N/A	2.7
Sub-total		127.4 (20.4%)
TOTAL ODA		**590**
Foundations		
Ford	N/A	5.7[k]
Rockefeller	59.7	17.9[l]
Carnegie Corp.	7.4	6.3[m]
Int. Foundation for Science -IFS	N/A	0.24
Sub-Total		30.14 (4.8%)
TOTAL		**620.1 (100%)**

[1] This comprises best estimates of contributions by Japan ($27.9m); Italy ($51.8m); Netherlands ($23.3m); Switzerland ($6.1m); and Arab Countries ($15.1m) to support developmental research in sub-Saharan Africa. See a more detailed study on which these figures were based "Development Research Donors in sub-Saharan Africa - A Review of Selected Agencies (Andrew O. Asibey)".

[2] Actual Program Appropriations by Region for FY 1988/89.

NOTES

a. This annual estimate is based on figures from different fiscal years, using the most recent information possible. Most of the bilateral figures are based on net bilateral disbursements of ODA to sub-Saharan Africa for FY 1987 as reported in the 1988 OECD Report. Sub-Saharan Africa's share of research funds is based on an estimate that 4.6% of bilateral and multilateral development funds is spent on research in any given fiscal year, as reported in the Lewis study (IDRC-MR160e). Note that all funds have been calculated in current Canadian dollars.

b. The total figure derived from USAID's Congressional Presentation, Annex IV (1989). The sub-Saharan Africa's share represents a best estimate of funds spent on supporting sub-Saharan African developmental research by the S&T Bureau, the Office of Science Advisor, the Africa Regional Bureau and contributions to CGIAR.

c. Between 1981 and 1988, BOSTID overall support for development research stood at $18.4 million CAD and sub-Saharan Africa's share was $2.6 million.

d. This estimate is based on SAREC's 1988/89 Annual Report.

e. The figure is derived from France's net disbursement of ODA to sub-Saharan Africa, and assuming that 4.6% of the total ODA is spent on development research in sub-Saharan Africa, including contributions to CGIAR.

f. Total as reported in U.K. ODA's Report on Research and Development 1986/87. sub-Saharan Africa's share is based on a calculation that 38% of U.K. ODA's net disbursements of ODA is spent in sub-Saharan Africa.

g. This figure was for FY 88/89 and it was given by CIDA through the IDRC-CIDA Liaison Officer.

h. GTZ's net disbursement for development projects in sub-Saharan Africa was $351.8 million in FY 1987/88, and it was assumed that 4.6% of the total was earmarked for research.

i. The World Bank's total consists of the Bank's contributions to CGIAR plus the average of its annual loans/credits specifically earmarked for supporting "free standing" agriculture research projects and agricultural and rural development projects with research components. Between 1981 and 1988, a total of $768.9 million was spent on such projects and this was divided by eight to have an average amount of $96.1 million. We also added the average contribution to non-CGIAR's in sub-Saharan Africa between 1984 and 1987 which totalled $1.6 million.

j. The figure represents 4.6% of $279.7 million which UNDP spent on development related activities in sub-Saharan Africa during FY 1988/89.

k. Sub-Saharan Africa's share was based on a list of projects cited in the 1987 Ford Annual Report. Research oriented projects were identified on the basis of type of activity and nature of recipient institutions.

l. An estimate given by a senior Vice President at the Rockefeller Foundation in New York.

m. Figure based on a best estimate of a Program Officer at the Carnegie Corporation in New York.

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